



Electrical code issues and answers.

● Communication with inspectors and inspection customers

In response to requests from electricians, electrical contractors, engineers, and our own electrical inspectors we have initiated "*ELECTRICAL CURRENTS*" as a forum for the code interpretations that are requested from the Chief Electrical Inspector. We hope that the publication of this information will result in fewer electrical corrections and improve consistency in the enforcement of the NEC and Electrical Installations Laws of Washington.

● Double-throw switches used as transfer switches

Listed double-throw "Enclosed Switches" that have been investigated for switching a common load from a normal supply to an optional standby system are marked "Suitable For Use In Accordance With Article 702 of the National Electrical Code" and acceptable for load transfer use on optional standby systems only. All other approved transfer switches are listed as "Transfer Switches" and marked as suitable for the intended use (such as Service Equipment, Emergency Systems, Optional Standby Systems, Automatic or Non-Automatic Transfer).

● Ground-fault circuit interrupters used as switches

There are strap mounted GFCI devices (smooth faced, without slots to accept a male receptacle adapter) available that are listed for use as a "20A-120V General Purpose Switch, 20 Amp Ballast, and 1½ HP Miscellaneous Motor Controller". The TEST and RESET buttons are additionally labeled ON and OFF.

● Meter Socket Accessories - Jumper Covers

There are listed meter socket covers with built-in jumpers rated up to 200 amps. The marking has been changed from "Temporary Jumper Cover Accessory" to "Jumper Cover Accessory". They will be accepted as permanent circuit conductors. At this time there is only one manufacturer (Ekstrom Industries) with this approval.

● Household, residential, and commercial fire/burglar alarm control units

The appropriate authority having jurisdiction (building or fire-protection) must be consulted prior to installing fire or burglar alarm control systems and must determine which type of control unit is required. It should be noted that most local fire departments would not approve the use of household fire warning system control units in commercial occupancies since this is a violation of the fire code. The National Fire Alarm Code, NFPA 72 (adopted in the Uniform Fire Code as an Appendix Standard) is enforceable in most jurisdictions.

Listed alarm equipment, when installed per its installation instructions, has been investigated for basic electrical safety from shock and fire hazards in compliance with intent of NEC 90-1(a)-**Practical Safeguarding** and NEC 90-7-**Examination of Equipment for Safety**. Electrical inspectors, per NEC 110-3(b)-**Installation and Use**, will insure that this equipment is installed in accordance with its installation instructions as far as wiring methods, circuit requirements, and equipment location and mounting.

The National Electrical Code, NFPA 70 (NEC) does not include requirements that differ between household and commercial alarm installations. Alarm control units can be considered to comply with the basic electrical safety requirements of the NEC sections above, regardless of whether they are used in commercial or residential applications. Final acceptance of the alarm control unit (type) is determined by the building or fire-protection official.

● Baptisteries with associated electrical equipment

These pools will be evaluated to the same NEC requirements as a hot tub, spa, or swimming pool with similar electrical equipment. A baptistry will be required to comply with the NEC Article 680 section that best describes the installation.

● Remodeled 3-wire electric range and clothes dryer circuits

Existing 3-wire electric range and clothes dryer circuits will be permitted to be moved or relocated in the existing 3-wire configuration if the installation is in compliance with NEC 250-60. These existing circuits will also be permitted to be extended, unless new 4-wire circuits in compliance with NEC 250-57 and NEC 250-59 can be installed without removing significant portions of the existing finished surfaces of the building.

● Relays installed in auxiliary gutters or wireways

Relays and similar equipment are not permitted to be installed in auxiliary gutters or wireways. NEC 374-1-**Auxiliary Gutters-Use** states auxiliary gutters *"may enclose conductors or busbars but shall not be used to enclose switches, overcurrent devices, appliances, or other similar equipment"*. Wireways are troughs in which cables and conductors are laid. They clearly meet the definition of a raceway, and raceways are *"designed expressly for holding wires, cables, or busbars, with additional functions as permitted in this Code"*. Nothing in NEC Article 362-**Metal Wireways and Nonmetallic Wireways** would permit wireways to contain anything except electric wires, cables, splices, and taps.

● Boarding homes and assisted living facilities

Under our electrical installations laws, boarding homes and assisted living facilities are classified as health care occupancies and not dwelling units. Electrical inspection fees will be based on the WAC 296-46-910(2) Commercial/Industrial section of the fee schedule. Electrical plan review is required for the work done on these facilities.

For the purpose of electrical load calculations, boarding home and assisted living facility loads can be evaluated per NEC 220-32-**Optional Calculation-Multifamily Dwelling** only if the units meet all of the electrical requirements of a "dwelling unit". This includes branch circuits in compliance with NEC 210-25-**Common Area Branch Circuits**, all required outlets from NEC 210 Part C-**Required Outlets**, and (in addition to the 2 small appliance circuits) a branch circuit that serves permanently installed cooking equipment.

Loads for common areas of these facilities, and apartment units not meeting the above requirements, must be calculated per NEC Article 220 Parts A and B. The demand factors of *"Hotels and Motels, including apartment houses without provision for cooking by tenants"* may be applied to the apartments. Location of receptacle outlets in the apartments must comply with NEC 210-60-**Guest Rooms**, the exception may be applied to permanent furniture layout.

● Wiring methods in open bottom handholes

All single conductors, splices, or taps installed in open bottom handholes must be of a type identified and approved for direct burial. The requirements for insulated conductors for general wiring are in NEC 310-13-**Conductor Constructions and Applications** and its referenced tables. NEC 300-3(a)-**Single Conductors** states that single conductors *"shall only be permitted to be installed where part of a recognized wiring method of Chapter 3"*. NEC 300-15(a)-**Box or Conduit Body** requires a box or conduit body *"be installed at each conductor splice connection point, outlet, switch point, junction point, or pull point for the connection of conduit"*. Open bottom handholes are not listed electrical equipment, conduit bodies, or boxes and not part of a recognized wiring method of NEC Chapter 3. Any single conductors, taps, or splices installed in such handholes would have to be suitable for conditions outside of an approved raceway system. The only single conductor wiring method of NEC Chapter 3 that complies is direct burial.

This requirement is consistent with Department of Transportation specifications for similar installations within their jurisdiction.